Task III.A: Emergency Preparedness and Radiation Effects

TASK III.A.1: IMPROVE LICENSEE EMERGENCY PREPAREDNESS - SHORT-TERM

The objectives of this task were to improve and upgrade licensee emergency preparedness by requiring improvements in facilities, plans, procedures, offsite support, technical assistance, equipment, and supplies required to adequately respond to and manage an accident.

ITEM III.A.1.1: UPGRADE EMERGENCY PREPAREDNESS

The two parts of this item are evaluated separately below.

ITEM III.A.1.1(1): IMPLEMENT ACTION PLAN REQUIREMENTS FOR PROMPTLY IMPROVING LICENSEE EMERGENCY PREPAREDNESS

DESCRIPTION

This TMI Action Plan[1] item called for licensees to promptly upgrade their overall state of emergency preparedness for accidents, including the integration of onsite and offsite emergency preparedness. The plan for staff review of licensee actions was documented in SECY-79-450.

In the short-term, the staff was directed to make an integrated assessment of licensee, local, and state capabilities and interfaces based on: (1) a review of existing plans and a meeting in each site area to communicate upgraded criteria and to identify to licensees the areas requiring improvements; and (2) a review of upgraded licensee, local, and state plans submitted by each licensee, after the site visit was summarized in an SER. A status report on this item was issued in December 1981.[2]

CONCLUSION

This item was clarified in NUREG-0737[3] and requirements were issued.

ITEM III.A.1.1(2): PERFORM AN INTEGRATED ASSESSMENT OF THE IMPLEMENTATION

DESCRIPTION

This TMI Action Plan[4] item called for the staff to perform a long-term integrated assessment of the implementation of the actions required by Item III.A.1.1(1). This assessment consisted of: (1) a review of implementation procedures, including onsite and offsite personnel and equipment; (2) observation and critique of exercise involving licensee, local, and state capabilities; and (3) observation and critique of exercises involving licensee, local, state, and federal capabilities.

CONCLUSION

Procedures for routine, periodic inspection of licensees' emergency preparedness programs were developed by the staff and used for subsequent routine inspections; observation of exercises is an ongoing function of the regions. Thus, this item was RESOLVED and no new requirements were established.

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[1] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.
[2] Memorandum for W. Dircks from R. DeYoung, "TMI Action Plan—Completed Items," December 28, 1981. [8205260197]
[3] NUREG-0737, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, November 1980, (Supplement 1) January 1983.
[4] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.

ITEM III.A.1.2: UPGRADE LICENSEE EMERGENCY SUPPORT FACILITIES

The three parts of this item are evaluated separately below.

ITEM III.A.1.2(1): TECHNICAL SUPPORT CENTER

DESCRIPTION

This TMI Action Plan[5] item called for a dedicated Technical Support Center (TSC) to provide a place for management and technical personnel to support reactor control functions, to evaluate and diagnose plant conditions, and for a more orderly conduct of emergency operations. The TSC was required to be separate from but near the control room and was expected to have the capability to dis-play and transmit plant status to those individuals knowledgeable of and responsible for engineering and management support of reactor operations, in the event of an accident.

CONCLUSION

This item was clarified in both NUREG-0737[6] and Generic Letter No. 82-33[7] and requirements were issued.

ITEM III.A.1.2(2): ON-SITE OPERATIONAL SUPPORT CENTER

DESCRIPTION

This TMI Action Plan[8] item called for the establishment of an Operational Support Center (OSC) separate from the control room as a place in which operations support personnel could assemble in an emergency situation to receive instructions from the operating staff. The OSC was to be provided with communication capability with the plant control room, TSC, and the near-site Emergency Operations Facility (EOF).

CONCLUSION

This item was clarified in both NUREG-0737[9] and Generic Letter No. 82-33[10] and requirements were issued.

ITEM III.A.1.2(3): NEAR-SITE EMERGENCY OPERATIONS FACILITY

DESCRIPTION

This TMI Action Plan[11] item called for a near-site EOF to provide a planned, organized, central focal point for coordination of onsite and offsite activities for reactor emergency situations. The EOF was required to be operated by licensees and sized and equipped to function as a center for: (1) licensee command and control functions of onsite operations and evaluation and coordination of all onsite and offsite licensee activities related to an emergency having actual or potential environmental consequences; and (2) analysis of plant effluent monitors, meteorological conditions, and offsite radiation measurements, and for offsite dose projections.

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[5] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.
[6] NUREG-0737, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, November 1980, (Supplement 1) January 1983.
[7] Letter to All Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits from U.S. Nuclear Regulatory Commission, "Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982. [ML031080548]
[8] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.
[9] NUREG-0737, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, November 1980, (Supplement 1) January 1983.
[10] Letter to All Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits from U.S. Nuclear Regulatory Commission, "Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982. [ML031080548]
[11] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.

CONCLUSION

This item was clarified in both NUREG-0737[12] and Generic Letter No. 82-33[13] and requirements were issued.

ITEM III.A.1.3: MAINTAIN SUPPLIES OF THYROID BLOCKING AGENT

Both parts of this item were combined and evaluated together.

DESCRIPTION

Historical Background

This TMI Action Plan item[14] addressed the issue of providing potassium iodide (KI) as a thyroid blocking agent for nuclear power plant onsite personnel, off-site emergency response personnel, and the general population near nuclear power plants. NUREG-0654[15] required licensees to have adequate supplies of KI available for onsite personnel and for offsite emergency response support personnel, including offsite agencies. The item also called for an evaluation by the Department of Health and Human Services (HHS) and the Environmental Protection Agency (EPA) regarding use of KI by the general public.

In accordance with SECY-82-396A,[16] RES was expected to complete a technical paper which evaluated the cost/benefit of the use of KI by the general public. These results were to be sent to the other federal agencies involved with the final decision.

Safety Significance

It is possible that a nuclear power reactor accident could release radionuclides, including isotopes of radioiodine, into the environment. The radioactive iodine, if taken up by the thyroid gland, could induce nodules of cancer in the thyroid.[17]

Possible Solution

If stockpiles of KI are made available for public use, the KI could help prevent radiation injury to the thyroid gland by saturating the gland with non-radioactive iodine.[18] This would block the thyroid from taking up the radioactive iodine.

CONCLUSION

The licensees are already required to maintain supplies of the thyroid blocking agent (KI) as a protective

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[12] NUREG-0737, "Clarification of TMI Action Plan Requirements," U.S. Nuclear Regulatory Commission, November 1980, (Supplement 1) January 1983.
[13] Letter to All Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits from U.S. Nuclear Regulatory Commission, "Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982. [ML031080548]
[14] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.
[15] NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," U.S. Nuclear Regulatory Commission, February 1980, (Rev. 1) November 1980.
[16] SECY-82-396A, "Withdrawal of SECY-82-396 (Federal Policy Statement on Use of Potassium Iodide)," U.S. Nuclear Regulatory Commission, October 15, 1982. [8211040047]
[17] NUREG/CR-2800, "Guidelines for Nuclear Power Plant Safety Issue Prioritization Information Development," U.S. Nuclear Regulatory Commission, February 1983, (Supplement 1) May 1983, (Supplement 2) December 1983, (Supplement 3) September 1985, (Supplement 4) July 1986, (Supplement 5) July 1996.
[18] NUREG/CR-2800, "Guidelines for Nuclear Power Plant Safety Issue Prioritization Information Development," U.S. Nuclear Regulatory Commission, February 1983, (Supplement 1) May 1983, (Supplement 2) December 1983, (Supplement 3) September 1985, (Supplement 4) July 1986, (Supplement 5) July 1996.

measure for emergency workers and other individuals onsite during an emergency.[19,20] Therefore, Item III.A.1.3(1) was resolved.

Work completed by the staff on the subject of stockpiling KI for public use resulted in a cost/benefit study which was published in NUREG/CR-1433.[21] HHS completed its recommendations on the methods for administration of KI to the general public (130 milligrams/day at projected thyroid doses of 25 rem or greater) and published them in the Federal Register in 1982 (47 FR 28158). NUREG/CR-1433[22] showed that the use of KI by the general public has a very low cost/benefit ratio. FEMA, through a special subcommittee of the Federal Radiological Preparedness Coordinating Committee (FRPCC), developed a draft federal policy statement in July 1982 on the use of KI for thyroid blocking by the general public. This draft policy statement left the decision on distribution and use of KI for thyroid blocking by the general public to the state and local authorities on a site- specific basis. The HHS guidance on KI use was addressed in the statement as well as many of the problems and difficulties in distribution and administration of the drug (e.g., timeliness, interference with other protective actions, and limited protection). The NRC staff did not agree with the draft federal policy statement because it believed that the statement should recommend that KI not be distributed for use by the general public. A new cost/benefit study was prepared using an uncertainty analysis of the information in NUREG/CR-1433[23] and showed that KI offered an extremely small benefit in relation to its cost over the uncertainty range.

The new cost/benefit study and prepared changes to the draft federal policy statement were reviewed by the ACRS and forwarded to the Commission for consideration in SECY-83-362.[24] While the Commission was considering the staff position, FEMA decided to revise the draft federal policy statement because of the lack of concurrence by NRC and several other member agencies of the FRPCC. The Commission decided to review this new policy statement before responding to FEMA.

The new draft federal policy statement was completed by the FRPCC on March 26, 1985 and was sent to the Commission for review on May 13, 1985 (SECY-85-167).[25]

This new policy statement recommended against a nationwide requirement for the distribution or stockpiling of KI for use by the general public and left the final decision for its use to state and local authorities on a site-specific basis. On June 11, 1985, the Commission concurred with the new policy statement. FEMA published the policy statement in the Federal Register on July 24, 1985 (50 FR 30258). With the publication of the federal policy statement on the distribution and stockpiling of KI for use in the event of a nuclear power reactor accident, this item was RESOLVED and no new requirements were established.[26]

ITEM III.A.1.3(1): WORKERS

This item was evaluated in Item III.A.1.3 above and was determined to be RESOLVED. No new

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[19] NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," U.S. Nuclear Regulatory Commission, May 1980, (Rev. 1) August 1980.
[20] NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," U.S. Nuclear Regulatory Commission, February 1980, (Rev. 1) November 1980.
[21] NUREG/CR-1433, "Examination of the Use of Potassium Iodide (KI) as an Emergency Protective Measure for Nuclear Reactor Accidents," U.S. Nuclear Regulatory Commission, October 1980.
[22] NUREG/CR-1433, "Examination of the Use of Potassium Iodide (KI) as an Emergency Protective Measure for Nuclear Reactor Accidents," U.S. Nuclear Regulatory Commission, October 1980.
[23] NUREG/CR-1433, "Examination of the Use of Potassium Iodide (KI) as an Emergency Protective Measure for Nuclear Reactor Accidents," U.S. Nuclear Regulatory Commission, October 1980.
[24] SECY-83-362, "Emergency Planning—Predistribution/ Stockpiling of Potassium Iodide for the General Public," U.S. Nuclear Regulatory Commission, August 30, 1983. [8309080120]
[25] SECY-85-167, "Federal Policy Statement on the Distribution and Use of Potassium Iodide," U.S. Nuclear Regulatory Commission, May 13, 1985. [8505310621]
[26] Memorandum for W. Dircks from J. Taylor, "TMI Action Plan—Completed Item," August 15, 1985. [8508200726]

requirements were established.[27]

ITEM III.A.1.3(2): PUBLIC

This item was evaluated in Item III.A.1.3 above and was determined to be RESOLVED. No new requirements were established.[28]

[27] Memorandum for W. Dircks from J. Taylor, "TMI Action Plan—Completed Item," August 15, 1985. [8508200726]
[28] Memorandum for W. Dircks from J. Taylor, "TMI Action Plan—Completed Item," August 15, 1985. [8508200726]